WHAT IS CLAIMED IS:

1. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter $\phi$ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm and a ratio $L/\phi$ in a range of $0.1 \leq L/\phi \leq 3.0$, and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.

2. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter $\phi$ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm, a ratio $L/\phi$ in a range of $0.1 \leq L/\phi \leq 3.0$ and an average volume equal to or smaller than $5 \times 10^{-4}$ $cm^3$, and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.

3. A method of producing minute metal balls, comprising the steps of cutting a wire material having a diameter $\phi$ at predetermined distances to provide metal pieces having a cut length L equal to or smaller than 2 mm, a ratio $L/\phi$ in a range of $0.1 \leq L/\phi \leq 3.0$, an average volume equal to or smaller than $5 \times 10^{-4}$ $cm^3$, and a CV value of volumes equal to or smaller than 5 % calculated according to the following equation:

$$\text{CV value} = \sigma_v/V_{ave} \times 100\ (\%),$$

wherein $V_{ave}$ is an average volume of the metal

pieces, and $\sigma_v$ is a standard deviation in a distribution of volumes of the metal pieces; and introducing the metal pieces into a plasma flame to spheroidize the metal pieces.

4. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are made of any metal selected from the group consisting of Cu, Ag, Au and Al, or an alloy as a main of any of these metals.

5. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are made of any metal selected from the group consisting of Fe, Ti, W, Ni and Cr, or an alloy as a main of any of these metals.

6. A method of producing minute metal balls according to any of claims 1 to 3, wherein the metal pieces are introduced into the plasma flame forming a reducing atmosphere.

7. A method of producing minute metal balls according to any of claims 1 to 3, wherein 1 to 20 % by volume of a hydrogen gas is contained in a plasma operating gas for generating the plasma flame.

8. A method of producing minute metal balls according to any of claims 1 to 3, wherein RF plasma is used as the plasma flame.